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Colorado GLCI Technical Note 3

Colorado Grazing Lands Conservation Initiative

Monitoring Your Rangeland

What is Monitoring?
Monitoring is the process of gathering information about plants and the rangeland system response to a grazing regime in order to make informed decisions and adjustments. The intent of prescribed grazing management is to maintain or improve the resource and create a sustained output of animal products, clean water, improved soil conditions, and wildlife habitat.

Why Monitor?
Once you have implemented a grazing management program on your rangeland it will be necessary to have some means of checking on your progress. It is desirable to know if the management you have invested in is moving the ecological conditions of your land in the correct direction, and if not, what corrective actions need to be implemented.

What is Rangeland Monitoring?
The monitoring of your grazing program can be as simple or complex as desired by the manager. There are several methods of monitoring each with it's own advantages and drawbacks. No one method fits all ranchers' situations or needs. The main point to remember is that whatever method(s) you choose, it must be effective in providing useful information about your grazing program so that timely decisions can be made.

What are Some Different Methods of Rangeland Monitoring?
Monitoring methods can be grouped by short-term and long-term time frames. Short-term monitoring provides information that is useful for making quick, easily carried out adjustments. This kind of information is relatively easy to gather and interpret. An example of this kind of information is quantifying the amount of forage used during a grazing event. The ***Grazing Response Index*** developed by Dr. Roy Roath, CSU Cooperative Extension Range Specialist, is another short-term monitoring method that can be used to obtain timely information about the effects of grazing events during a year. This method is discussed in more detail below.

Long-term monitoring involves the gathering of more detailed information. An example would be quantifying the trend in rangeland similarity index on a particular ecological site on your ranch. This involves collecting and analyzing several years worth of inventory data. Usually the information is gathered from permanently located points or "transects" laid-out in a pasture so that the information can be equitably compared as time progresses.

What is the Grazing Response Index (GRI)?
This method of monitoring was developed to assess the effects of grazing during the current year and aid in planning the grazing for the following year. The GRI is based on general assessment of the current grazing use. It involves three concepts related to plant health in evaluating the impacts of grazing. These are the frequency of defoliation, the intensity of defoliation, and the opportunity of the plant to regrow after being grazed.

Frequency refers to the number of times forage plants are defoliated during the grazing period. It is dependent on the length of time (grazing period) plants are exposed to grazing animals. A simple way to estimate how many times plants were, or will be, defoliated during a grazing period, is to divide the number of days in the planned grazing period by 7. An index value of +1 to –1 is assigned as follows:

Number of Defoliations	Value
1	+1
2	0
3	-1

Intensity is a description of the amount of leaf material removed during the grazing period. The primary concern is the amount of photosynthetically active material remaining for the plant to recover from defoliation. A plant that has relatively more leaf area remaining after grazing is going to respond better than one that has

less leaf area. The intensity of grazing use is linked with the relative stocking rate in the pasture. The GRI uses the following values for describing intensity of grazing:

Level of Defoliations	% Used	Value
Light	<40%	+1
Moderate	41-55%	0
Heavy	>:56%	-1

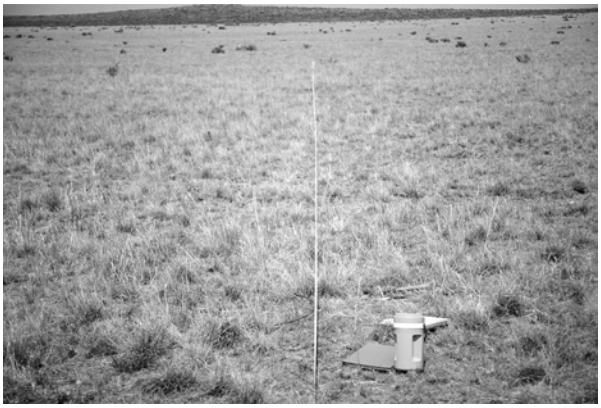
Opportunity of the plant to regrow is the amount of time plants have to regrow after the grazing has taken place. The plants must be able to fully store energy at some time during the active growth period before the next scheduled grazing period. Therefore, it is critical that your grazing management program allows the key forage plants the opportunity for full recovery after being grazed. Since this factor is so important in sustaining healthy plants, the relative rankings are doubled in value when the final GRI rating is calculated.

Opportunity for Regrow	Value
Full Season	+2
Most of Season	+1
Some Chance	0
Little Chance	-1
No Chance –continuous season-long grazing	-2

The overall GRI rating is obtained by adding the values for the frequency, intensity and opportunity for regrowth together. A positive value indicates that the grazing management was beneficial to the health, structure and vigor of the plants. Conversely, a negative value indicates that the grazing management being monitored was harmful. A zero rating is neutral.

The GRI is a simple but comprehensive method to monitor the effects of current grazing management. It provides quick feedback to your management, and allows you to make timely adjustments to grazing without major investments of money and time.

What Are Some Other Monitoring Methods?
Other monitoring methods that can be used to obtain long-term information include: forage production and plant community composition data of key ecological sites on your ranch, Rangeland Similarity Index (RSI) values of key ecological sites, Proper Functioning and Condition (PFC) assessments of your riparian areas, permanent photo points, and Land EKG® monitoring adopted by Charlie Orchard of Land EKG Inc. Assistance in applying these methods as well as the *Grazing Response Index* can be obtained by contacting your local NRCS or CSU Cooperative Extension Office.



Permanently installed monitoring site

The Colorado Grazing Lands Conservation Initiative Committee, USDA Natural Resources Conservation Service, and CSU Cooperative Extension cooperated in developing this technical note.